Quality Management Systems Guide

Quality — Leadership — Innovation

October 8, 1997

www.giqlp.org

Recipient of the National Performance Review's *Hammer Award*

Contents

Section I

Executive Summary

Overview

The G&IQLP is a partnership involving twelve Federal agencies and three major industry associations. The G&IQLP's work is based on DoD and NASA policies regarding the use of commercial quality standards and advanced practices and has been designed to pursue harmonization of the procurement practices in the quality area. An Executive Steering Group representing the participating Government departments, agencies, and key industry associations has guided the Panel.

Two key events led to the establishment of the Government and Industry Quality Liaison Panel: (1) the advent of Government acquisition reform initiatives targeted at improving the effectiveness of acquisition, and (2) the drive to assist defense contractors to better serve both defense and commercial customers while becoming more competitive.

Background

Government and industry are confronting unprecedented changes—changes stemming from the end of the cold war, spiraling national debt, and intense global economic competition. In this new environment, budgets are being increasingly constrained, making it imperative that we find better, faster, and cheaper ways to acquire products and services.

Commercial firms have been able to make substantial gains on these objectives due in part to their use of advanced process management tools and techniques. A new quality paradigm, prevention-oriented and process-driven, is at the heart of many of their improvements. It requires greater integration and involves more teaming, cooperation, and coordination among users and producers. It also shifts the responsibility for quality from being the sole obligation of quality assurance professionals to being an integral part of everyone's job.

The challenge is for Government and industry to adapt and emerge stronger and fitter to achieve our objectives. For companies successfully competing on an international basis, this adaptation has taken the form of an ardent drive to improve quality. This has resulted in emphasis on lean manufacturing, emphasizing perfect, first time quality; and the use of advanced engineering and manufacturing practices, teaming with customers and suppliers with strong emphasis on flexibility, waste minimization, and continuous improvement.

Recent fundamental changes in the Government's approach to systems development and acquisition have provided the opportunity to rethink the policies, practices, and procedures that have been longtime cornerstones of Government acquisition. For these changes to be successful, Government and industry organizations must work together to understand how these changes will impact each other and to develop mutually supportive practices to resolve issues of common concern. The establishment of the Government and Industry Quality Liaison Panel provides the harmony to accomplish these objectives.

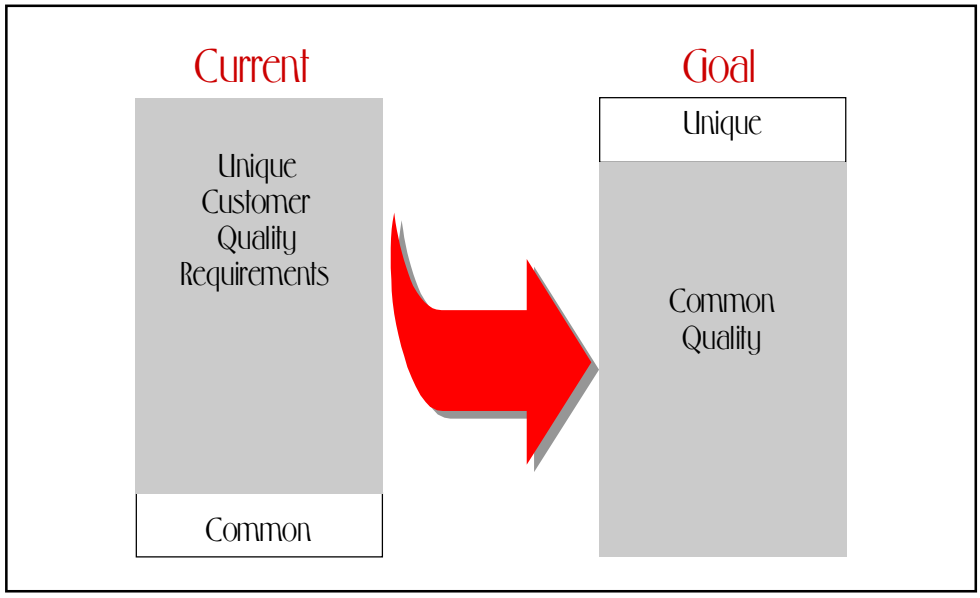
In recognition of its vision and efforts, the Panel was awarded the National Performance Review's *Hammer Award* in November 1995.

Approach

The Government and Industry Quality Liaison Panel's strategy is based on the experience and best practices of leading edge Government and industry organizations. It is designed to improve partnerships between Government and industry and to remove barriers that impede the achievment of world class quality.

Historical use of extensive oversight and unique quality assurance requirements have required contractors to organize and manage facilities on a contract-by-contract basis. The inefficiencies of this approach are not in keeping with the Government's acquisition reform efforts.

The G&IQLP has identified issues of mutual concern and worked together to shift the Government's approach to procurement from dictating unique customer quality requirements for every contract to more reliance on one common quality system.



The G&IQLP partnership has had three overarching goals:

1. the adoption of a single quality system in a contractor facility;

2. the definition and use of advanced practices; and

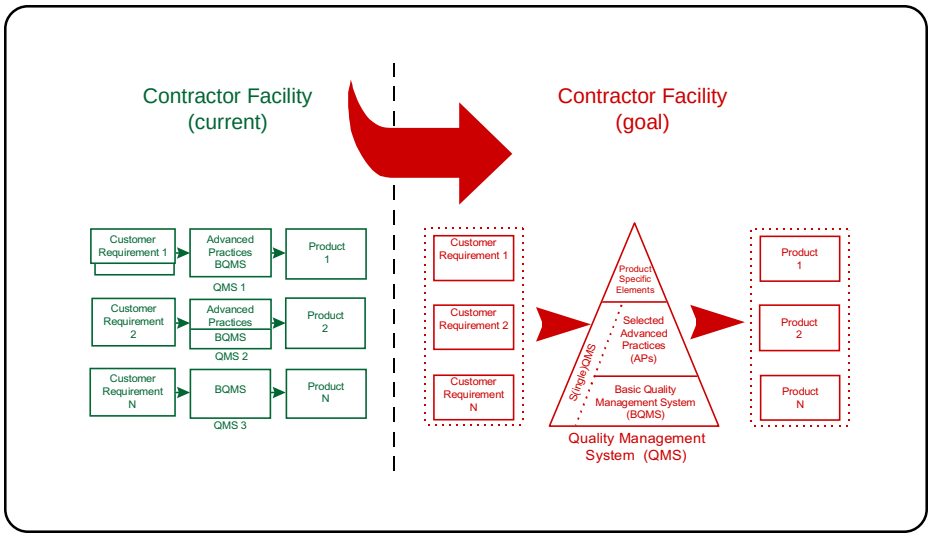
3. the promotion of effective and efficient oversight methods.

Findings

The findings of the G&IQLP represent the work of approximately 130 Government and industry acquisition professionals representing a wide variety of disciplines. The Panel's focus has been on improving acquisition by taking advantage of commercial best practices and tools to acquire goods and services better, faster, and cheaper.

Goal 1 - The adoption of a single quality system in a contractor facility.

The Panel has defined guidance for a single quality system, within a contractor's facility, that is capable of meeting each customer's require-ments. The Panel envisions a single quality management system (SQMS) that is comprised of a basic quality management system (BQMS) and



elements of facility wide advanced practices, which have been selected by the contractor to be a part of his QMS. However, a Quality Management System (QMS) must recognize and successfully incorporate product specific requirements as well.

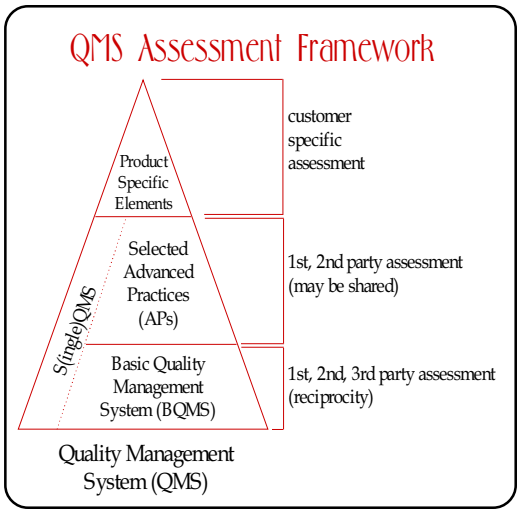
In the past, approaches to motivate quality improvement have often worked in opposition to efforts to achieve a single quality system in a contractor's facility. A consistent approach is needed to motivate improvements in system performance and quality management while allowing contractors to maintain a single quality system.

Goal 2 - The definition and use of advanced practices.

The Panel recognizes that Government and industry must use advanced practices (engineering, manufacturing, and management) in the definition, design, manufacture, and acceptance of products.

Industry has made significant advances in the application of advanced management tools, practices, and processes. To take advantage of these advanced practices in the acquisition environment, source selections must solicit, judge, and reward the use of effective advanced practices. The G&IQLP has proposed such a source selection process, which addresses those APs selected as part of his QMS.

Goal 3 - The promotion of effective and efficient oversight methods



The Panel has focused on the effective implementation of criteria for a baseline (or basic) quality system and appropriate oversight methods. This will contribute to competitiveness and improve the quality and value of products and services. The G&IQLP has developed guidance for assessment of a quality management system and for reciprocal acceptance by customers.

Training Guidance

Awareness and training are crucial elements of the findings of the G&IQLP. The Panel recognizes the emphasis placed on education and training by successful companies and the need to develop future managers as “systems thinkers.” Systems engineering, risk management, and quality management concepts and disciplines are merging into a single, fully integrated process within a program or enterprise, based on the use of Integrated Product/Process Teams (IPPTs).

Leadership Guidance

Leadership is pivotal to successful implementation of the findings of the G&IQLP. Diversity in definition and interpretation of quality system requirements has led to confusion in quality expectations. Close coordination is required to ensure that activities synchronize their approach to requirements, procurement, and oversight activities. These findings include guidance to assist Government and industry in achieving this coordination and in establishing and recognizing a single quality management system within a contractor facility. These recommendations are provided to policy-makers for use in developing and tailoring policies and procedures.

Section II

Single Quality Management System Guidance

Definition

A single quality management system (SQMS) is one defined by the supplier for a specific facility. It contains a basic quality management system (BQMS) and is augmented by facility-wide advanced practices (APs), as appropriate.

Background

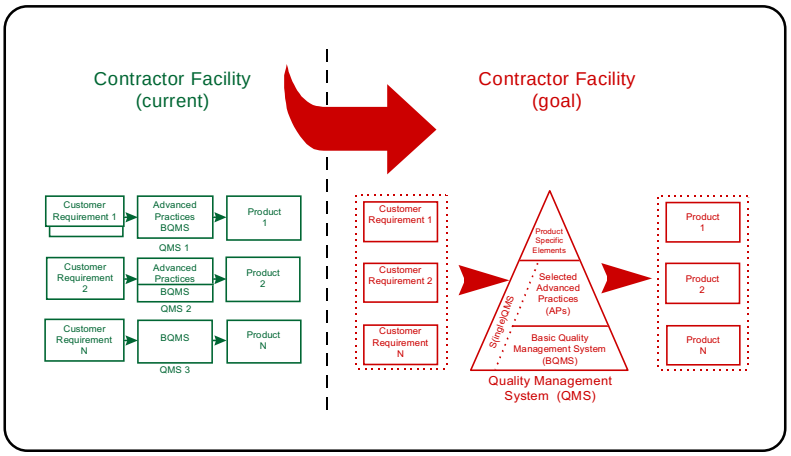
One challenge of the Government and Industry Quality Liaison Panel was to establish effective processes and methodologies to enable suppliers to use their normal quality management systems whenever those systems are capable of meeting the customer's acquisition needs. Many supplier facilities operate multiple quality management systems that conform to the requirements of different Government agency customers. This situation creates a cumbersome system for the suppliers to maintain and adds cost to the respective procurements. The Panel's intent is to eliminate the burden of maintaining multiple and often redundant quality management system requirements.

To satisfy future procurement needs more effectively, the federal Government must increase its use of commercial technologies and must facilitate the adoption by its suppliers of world-class business processes. In addition, the integration of commercial and military development and manufacturing facilities and the development of dual use processes and products will contribute to an expanded industrial base that is capable of meeting Government needs at lower costs. Efforts to merge the federal and private

sector industrial base require increased use of commercial standards and recognition of contractor quality management systems.

Recent Situation

Procurement packages released by both Government and contractor buying agencies/organizations include a requirement for the supplier to develop, implement, and maintain a quality management system that is usually compliant with stated guidance (FAA-STD-013/016, MIL-Q-9858A, NASA-HB-5300, supplier equivalent documents, etc.). Often, redundant or overlapping specifications are listed in an apparent attempt to meet any and all requirements.



Supplier responses are reviewed and source selection audits are performed by procuring activities based on parochial interpretations of how those system requirements "ought" to be met. The procuring activity gives little regard to establishing consistency in requirements among services, agencies, and offices that are also doing business with the same supplier facility. In reality, suppliers have only one basic, comprehensive quality management system, designed for that supplier's products. The supplier amends this basic quality system to meet

The ANSI/ASQC Q9000 series of standards is the U.S. equivalent of the ISO 9000 series. The G&IQLP refers to ISO 9001 throughout this document.

the customer's unique requirements. The left side of the diagram depicts this situation. Note that the foundation is the supplier's one BQMS.

Objective of SQMS

The objective of the Panel in promoting a single quality system is not to advocate a rigid and uniform quality management system across Government and in every supplier's facility. This plan envisions a multi-tiered quality management framework. As depicted on the right side of the figure on the previous page, the SQMS exists within a supplier's overall QMS and consists of two basic components: a basic quality management system (BQMS) and selected Advanced Practices (APs).

The foundation of the framework is a BQMS. The criteria or functions comprising the supplier's BQMS would be recognized and agreed to Government-wide and across industry. The supplier's BQMS would be certified or verified periodically. This verification of the supplier's BQMS may be recognized and accepted by all customers—Government agencies and contractors alike.

On a facility-by-facility basis, an organization could augment its BQMS by the use of APs. Where these practices add value to the product, they would be recognized by the customer and given appropriate weight in the selection process. Certifying, verifying, or monitoring advanced practices could be done by a first, second, or third party agent, as mutually agreed to by the customer and the supplier.

When product-specific requirements are implemented in a supplier facility, these unique requirements are controlled by the supplier, with customer involvement as deemed appropriate.

Implementation Approach

It is widely accepted that for any quality initiative, such as the single quality management system, to succeed, senior management within Government and industry have to establish policies and provide the resources needed to implement and institutionalize the initiative.

The following is a suggested approach for the implementation of a single quality management process.

1. Establish and promulgate SQMS policies (within individual agencies) which establish the requirement for a QMS. For additional risk mitigation, define the role of the Source Selection Process in defining customer objectives.

2. Communicate policy direction and establish and implement training.

3. Establish “reinvention laboratories” or pilot programs to demonstrate the value added of the SQMS approach.

Benefits of Implementing SQMS

Benefits of implementing an SQMS include:

1. Improved product quality and reliability by increasing emphasis on “value added” product and process assurance (advanced process management) activities, including emphasis on advanced quality planning, life-cycle cost management, and waste minimization.

2. Establishment of a common “way of doing business” for risk management and product assurance in procurement, acquisition, and contracting.

3. Money and time saved by lowering supplier direct and indirect rates associated with maintaining multiple quality and product assurance systems.

Section III

Basic Quality Management System Guidance

Definition

A basic quality management system is a quality management system based on the appropriate elements of ISO 9001.

Introduction

The objective of this section is to assist program managers and acquisition officials in defining their requirements for a basic quality management system. A basic quality management system (BQMS) is a set of fundamental practices that focus on assuring that the delivered product or service conforms to the agreement between the customer and the supplier. The elements of the BQMS are basic requirements for a quality management system and apply across the full spectrum of the supply base. Consistent with the objective of facilitating a single quality management system (SQMS), and in recognition of the predominantly international nature of today's marketplace, the basic quality management system has been defined to be the applicable elements of ISO 9001. These elements provide for a disciplined and documented approach to the implementation of a BQMS within a contractor's facility.

Background

As the cold war ebbed and international commerce burgeoned, spiraling national debt and old business paradigms threatened the United States leadership in the world community. It became evident that focus had to be placed on effectiveness and efficiency of Government and industry busi-

ness processes; to become better, faster, and cheaper. It became time to redefine the basic strategies by which Government and industry conduct business.

As international commerce began to dominate the marketplace, regional interests began to develop and impose quality-related standards that, at least in appearance, were becoming non-tariff trade barriers. In 1987, the International Organization for Standardization published the first of the ISO 9000 series of standards. These standards are based on United States military standards MIL-Q-9858, “Quality Program Requirements,” and MIL-I-45208, “Inspection System Requirements,” developed in the late 1950s. The ISO 9000 standards have become universally adopted and thus serve as an appropriate common baseline. In the 1994 edition of this series, ISO 9001 and 9002 became identical except for the inclusion of design requirements which are only contained in ISO 9001.

Implementation

A basic quality management system has been defined as the appropriate elements of ISO 9001. It is important to note that the BQMS is defined as the **elements** of these standards, not the standards themselves. It is also important to recognize that it is not the intent to require independent certification/registration of the contractor’s facility(s). Guidance for assessment and surveillance are provided in Section V of this guide.

A contractor’s BQMS must incorporate the appropriate elements on ISO 9001.

Structuring the Request For Proposal

Suggested Language for *Section C: Description/Specification/Work Statement*

The contractor shall maintain a quality management system that satisfies program objectives and is based on the applicable elements of ISO 9001.*

*(*Agencies accepting third-party registration/certification, in part or in whole, should so stipulate here.)*

Suggested Language for *Section L: Instruction to Offerors*

Regarding the section on “basic quality management system require-ments....”

Offerors shall provide evidence of compliance to the established Quality Management System.

Suggested Language for *Section M: Evaluation Factors for Award*

Regarding the section on “The Offeror’s approach will be evaluated on....”

The Offeror’s approach will be evaluated on the acceptability of its quality management system, based on the applicable elements of ISO 9001, within the context of the procurement.

Section IV

Advanced Practices Guidance

Definition

Advanced practices (APs) for product quality are those engineering, manufacturing and management practices, tools and processes used during requirements definition, design, manufacturing, and acceptance of products to enhance product quality and reduce risk.

Selected, facility wide APs can be identified as part of a contractor's single quality management system, at the discretion of the contractor. APs are beyond that which is contained in the basic quality management system (BQMS). All such practices do not necessarily have to be part of a QMS; they may be included in other areas, such as Engineering, Manufacturing, etc. Note that the term *advanced practices* is not used consistently throughout Government and industry. Many different terms are used to describe this concept. These practices are not exclusively for the quality professionals; rather, they are intended to be used by all functional entities as appropriate.

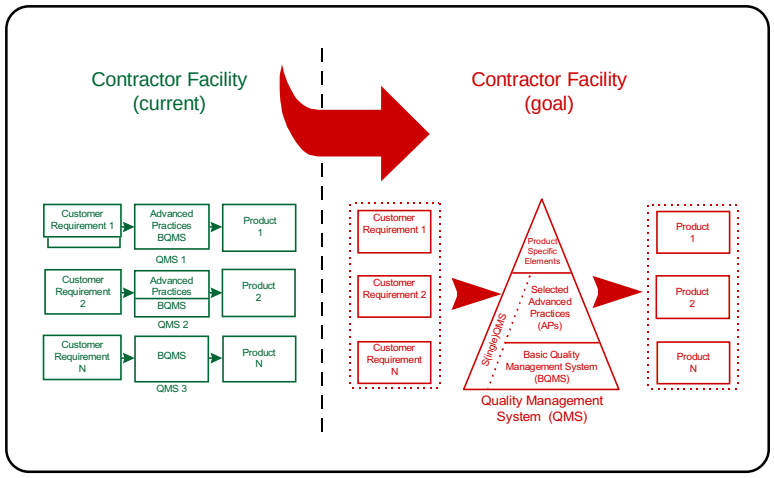
Introduction

Advanced practices are used to mitigate risks inherent in a particular program activity. When properly implemented, the application of advanced practices can result in reduced life cycle costs and lower program risks. Examples include (but are not limited to): Integrated Product and Process Development (IPPD) Teams; facility-wide continuous improvement processes; the use of definition tools; practices used in designing for robustness; variability reduction; team based organization; and quality function deployment (QFD).

When applied during the design and development phase of a program, APs address issues such as producibility, reliability, and quality at the earliest stages in the design process. During the production phase, these practices may be applied to mitigate specific performance or schedule risks. In simple terms, APs translate to “best practices.” The “best” companies have developed a learning culture to reduce risks on any program. This guidance provides a high level overview of the role of advanced practices in source selection.

Background

Advanced practices supplement the BQMS (as discussed in Section III) in that they are manifested in a structured approach to continuous improvement of all processes and products. The focus is on the processes that produce a product rather than just the product itself. Employees who perform the processes are trained to use tools to analyze, streamline, stabilize, and measure it, and then, on a continuous cycle, reduce variability to optimize output. APs are enhancements to the BQMS and further reduce risk.



In the development process, advanced practices enable producible designs and capable, controlled manufacturing processes. Benefits realized by emphasizing an integrated, multifunctional approach throughout the product life cycle include decreased cycle time; reductions in rework, engineering changes, inspections, and tests; and higher first pass yields out of both design and production processes.

Purpose

The purpose of this section is to assist program managers and acquisition officials in taking advantage of advanced practices. Note that the guidance contained herein departs from the traditional approach for communicating the Government’s expectations to potential contractors. It does not include

a lengthy set of detailed model contract requirements. Rather, it emphasizes selection of contractors who demonstrate that they have effective advanced practices. Companies are far more motivated to implement such practices by the reward of new business than by the stipulation of contract requirements. This guidance is to be used to:

- encourage offerors to describe in proposals their advanced approach to quality,
- identify offerors who propose credible advanced practices, and
- incorporate specified advanced practices of the proposal into the final contract.

Source Selection Principles

The contractor should be given credit for use of APs in whichever area they are proposed. This guidance focuses on APs that are identified as part of the contractor's QMS.

Since winning contracts is what drives offerors, the request for proposal (RFP) and the source selection process must:

- define expectations for risk mitigation and management, and
- structure source evaluations to give appropriate credit for application of advanced practices that reduce program risk.

Of importance is how application of advanced practices will add value to the ultimate product and reduce risk in achieving performance requirements. Proposals describing advanced practices that reduce program risk should receive better evaluations, commensurate with the evaluated risk reduction. As such, advanced practices would be discriminators in source selection, where the value of their use should be weighed appropriately based on the product's complexity, criticality, cost, risk, or other factors.

When advanced practices are proposed to mitigate program risk, the source selection evaluation will include verifiable factors such as past performance, process controls, or interagency mutual recognition agreements.

Structuring the Request for Proposal

This section introduces a process to structure the RFP to allow offerors to provide information that will enable the source selection team to assess risk to performance. The RFP language does not dictate what advanced practices might or must be incorporated. Rather, it allows the offeror to identify those practices important to the project in terms of the risk mitigation they will bring. The risk assessment is based on the ability of the offeror to implement an effective approach to quality and evidence of demonstrated effectiveness. The language presented here is general in nature, and the user should consider tailoring the language to optimize use for the specific application.

Suggested Language for Section C, *Description/Specification/Work Statement*

"In addition to the basic quality management system defined by elements of ISO 9001, the contractor may define and incorporate in a program-specific management plan, proposed advanced practices that would further reduce program risk. The location of the information or source shall be clearly specified."

Suggested Language for Section L, *Instructions to Offerors*

"The offeror is invited to propose any advanced practices that will be used to mitigate program risk. These advanced practices are to be described in terms of expected value and benefit in risk mitigation. The metrics used by the contractor in measuring the effectiveness must be described. Metrics associated with the use of these advanced practices in prior procurements that demonstrate the value and effectiveness of these practices should be included. In the event historical performance evaluation is not available, the offeror should propose how these practices will be managed through maturation. Advanced practices that show evidence of reduced program risk will receive added consideration during source selection. The location or source of the information shall be clearly specified."

"External recognition . . .

"In order to assist in gauging the maturity and capability of the advanced practices proposed, offerors are invited to identify and discuss recognition and/or evaluation by customers or outside sources. Examples may include achievement of preferred supplier status, ISO 9001 registration/certification/validation, Malcolm Baldrige finalist status, George M. Low Award (NASA) finalist, etc."

Suggested Language for Section M: *Evaluation Factors for Award*

"The offeror's approach will be evaluated based on:

1. The effectiveness of advanced practices, when proposed, in mitigating program risk. Consideration will be given to the extent to which:

    a. The proposed approach reflects the integration of risk reduction efforts into the planning for this program.

    b. The contractor employs a disciplined, structured process to identify and mitigate risks.

    c. Metrics associated with the offeror's use of these advanced practices in prior procurements that demonstrate the value and effectiveness of these practices.

2. External recognition of quality excellence."

Section V

Assessment and Surveillance Guidance

Introduction

The purpose of this section is to provide a means for Government/industry customers to evaluate the basic quality management system (BQMS) of a present or potential supplier and to achieve Government/industry-wide acceptance of assessments.

Background

Uniform guidelines for evaluating the effectiveness of supplier quality systems are needed to improve upon the rigid quality practices of the past and move toward a more open, flexible, and effective approach to quality assurance. The soliciting activity is responsible for implementing an effective program of contractual quality assessments/evaluations. This section addresses guidelines for qualifying evaluators and supplier surveillance.

This guidance provides:

- a method of evaluating the current practices, policies, and procedures throughout a supplier organization as they relate to quality management.
- guidelines for qualifying evaluators.
- a maturity matrix for rating supplier quality systems.
- a basis for periodic reevaluation.
- definition of customer insight.
- explanation of mutual recognition of a supplier's quality managment system.
- explanation of reciprocity for quality system audits.

Assessment of a Basic Quality Management System

This guidance has been developed to assist in evaluating basic quality management systems and to provide a base from which specific actions can be developed to make programs more effective. The maturity matrix at the end of this section provides guidance to:

- establish criteria for evaluation of a supplier.
- implement a mutually recognized single evaluation process to validate quality management systems.

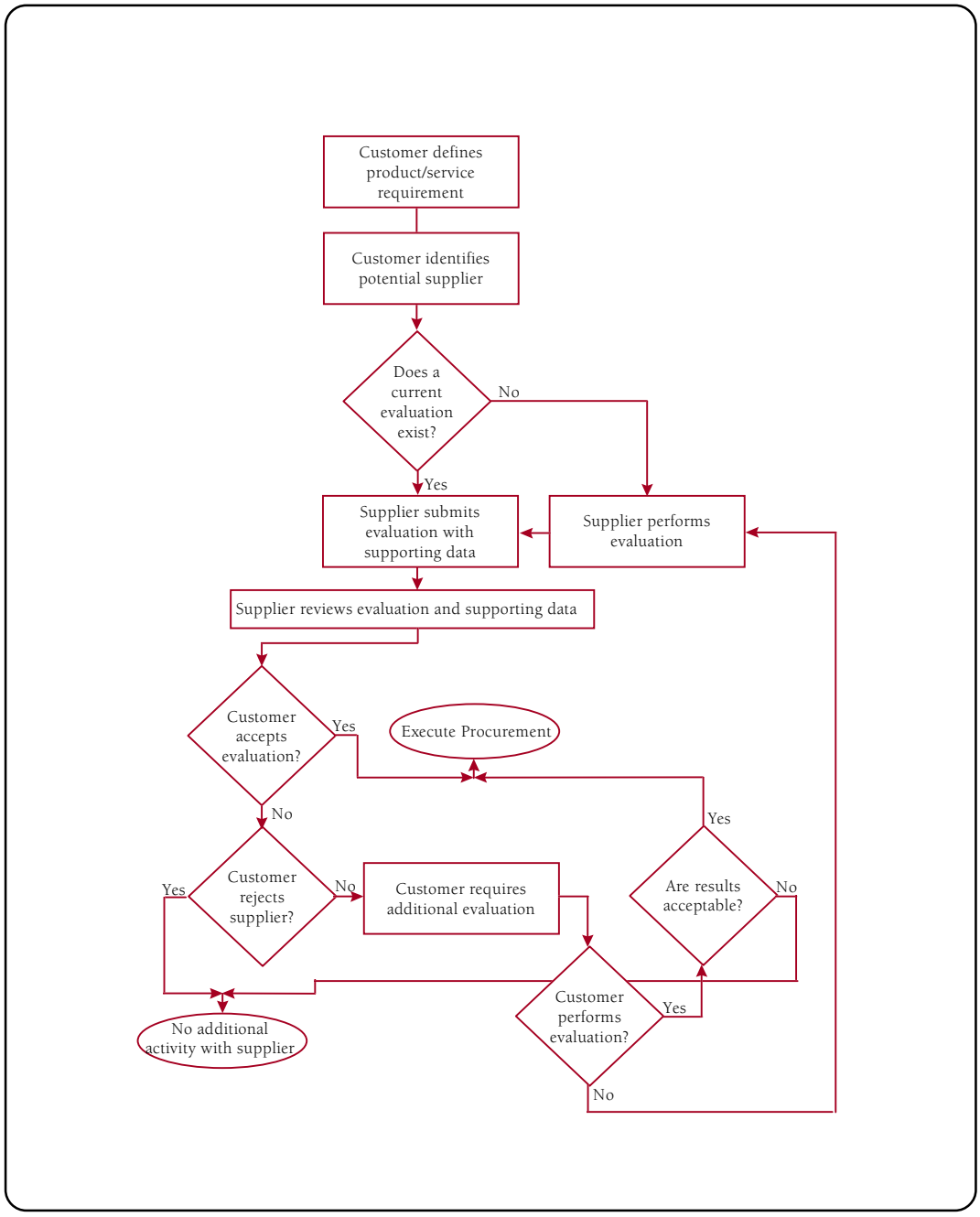
The evaluation criteria summarized in the maturity matrix are based on the elements of ISO 9001.

The potential supplier has the burden of proving quality system effectiveness. This may be documented in accordance with the maturity matrix. The customer will determine whether the basic quality management system is acceptable. In addition to the maturity matrix or other method used by the customer to determine acceptability of the BQMS, additional factors to be used by the customer might include one or more of the following: supplier past performance, information derived from customers who have experience with the supplier on similar products, and qualification of the supplier's design. After the analysis/assessment of the BQMS, the customer may:

- accept the suppliers' initial assessment and begin procurement procedures,
- consider second or third party assessments,
- require additional assessment information from the supplier,
- perform their own supplier assessment; or
- reject the supplier from further consideration.

The frequency of routine reassessment of quality systems will be determined by each customer. It will depend on the degree of supplier success

in meeting customer expectations. Audit data from other customers may be used at the discretion of each customer.



Following is a flowchart depicting a methodical approach to evaluate a supplier's basic quality management system.

Quality System Evaluators

The customer is responsible for verifying the competence of quality system evaluators. The essential criteria required for a quality system evaluator should include applicable training, education, and experience. ISO 10011, Part 2, Qualification Criteria for Quality Systems Auditors, is available for guidance.

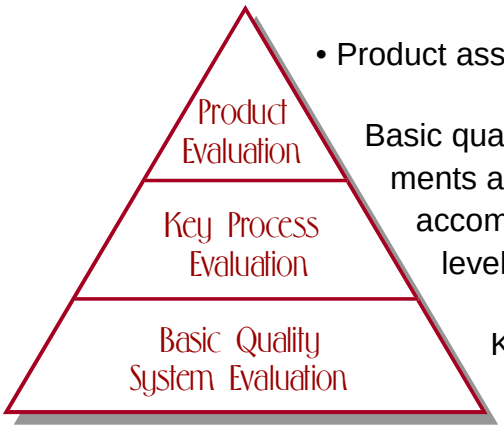
Insight and Ongoing Surveillance

Throughout the phases of quality system assessment the customer will emphasize clear supplier communication and ongoing customer-supplier relations. The objective is to assist and encourage suppliers to maintain consistently high standards of performance.

Customer insight refers to the ongoing surveillance of the quality management system performed by the customer. The traditional Government oversight role is transitioning to one of insight with streamlined methods of assessing/auditing prospective bidders and contractors. Surveillance may be unique for each contractual relationship.

Customer verification will be concerned with three general types of surveillance:

- Basic quality management system evaluation and reassessment
- Key process evaluation
- Product assessment



Basic quality management system evaluation and reassessments are described in the beginning of this section. The accompanying diagram depicts the insight assessment levels.

Key Processes have major impact on product performance. Key process assessments are directed at

specific processes. Mutually agreed upon performance measures will be established by customer and supplier. The performance measures will reflect the customer's requirements and established needs of the product or service relative to defined goals.

The product assessment verifies that unique requirements have been satisfied. The verifications are performed in addition to the assessments of the single quality management system and the key process assessments.

Insight
Confidence in Suppliers Quality System

	Excellent	Good	Poor
High Risk	**Reduced Surveillance** Decrease the number of scheduled assessments and reduce the sampling sizes.	**Maintain Surveillance** Continue standard assessments activities.	**Tightened Surveillance** Increase the number of scheduled assessments and impose a stricter limit for allowable number of non-conformities produced by the supplier
Medium Risk	Reduced Surveillance	Reduced Surveillance	Tightened Surveillance
Low Risk	No Surveillance Required	No Surveillance Required	Maintenance Surveillance

Risk Assessment Matrix

A potential tool for determining the level of surveillance and product/process surveillance is the Risk Assessment Matrix. The matrix suggests that different levels of surveillance are based on the maturity of the quality system. The maturity is judged by levels of risk—high, medium, and low.

A quality system element judged to be mature (excellent on the strength analysis scale) would have no surveillance for low risk products/processes and reduced surveillance for medium/high risks products/processes. The Risk Assessment Matrix will be developed jointly by the supplier and customer. Nonconformities will fall into an Excellent, Good, or Poor range and then match against the appropriate risk levels in the matrix. The matrix supports the level of surveillance required based upon the supplier performance and risk levels.

The following risk levels will be established based on standard criteria:

High Risk

- Unfamiliar or new supplier.
- Products deemed by the customer to be complex and/or critical.
- Process deemed by the customer to be complex and/or critical.

Medium Risk

- Unfamiliar, new, or marginal/poor performing supplier of noncomplex, noncritical parts produced by noncomplex processes.
- Well-established, reputable supplier with process not proven to be under control.

Low Risk

- Well-established, reputable supplier with a proven track record for meeting the customer’s needs.
- Processes deemed by the customer to be under control and capable.

Mutual Recognition of a Supplier's Quality Management System

An onsite supplier quality management system assessment, by one participating procuring customer or its agent, are encouraged to be recognized and accepted by the other customers as adequate evidence that the system was found to comply with BQMS criteria, at that time. Multiple reviews and duplicate demands of a contractor or supplier by several agencies should be reduced to the maximum practicable extent through assessment reciprocity or cross-servicing arrangements.

The one constant across government agencies or industry groupings,that enables mutual recognition of a supplier's quality management system is a basic quality system based on the applicable elements of ISO 9001. There may be further opportunity for mutual recognition within an agency or industry group of commonly agreed upon terms and conditions required of suppliers. The G&IQLP Template for Deployment follows.

G&IQLP Template for Deployment

_____ *Agency/Industry Group Name**		Quality System Requirements
Basic Quality System	=	Quality System based on elements of ISO 9000
+		
Specified terms and conditions (flowed down contractually)	=	_____ _____ _____ *(specify unique requirements**)*

* Examples:
- Aircraft Prime Contractors
- Space Flight Prime Contractors
- DOE Regulatory Agency
- Food Preparation Industry

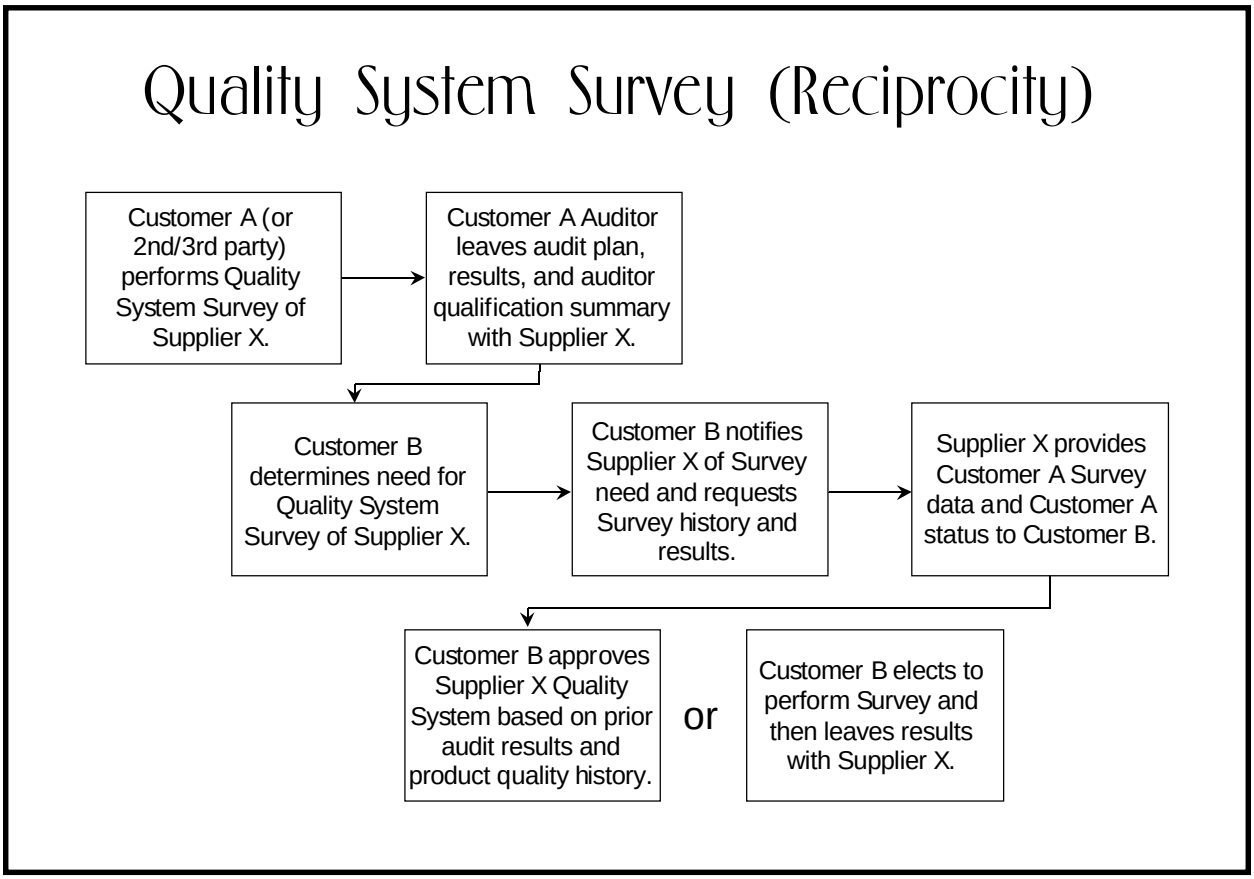
** work to minimize flowdown requirements

Reciprocity for Quality System Audits

To enable reciprocity and mutual recognition of a supplier's quality management system, at the conclusion of an on-site assessment each procuring customer or its agent will leave the supplier a copy of the assessment criteria (i.e., checklist) employed, the assessment results, and a statement of qualification of the performing assessors. Third party assesors will also be requested to provide similar information to the supplier.

Another procuring activity may then request of the supplier objective evidence of quality system assessments by other customers, agents, or third parties. The requesting customer will evaluate the prior assessment to determine suitability to satisfy assessment requirements. The customer may then consider the supplier's quality system to be qualified based on the evidence provided by the supplier, or determine that another or a partial assessment is required and then carry it out accordingly. Following is a flowchart of reciprocity for quality system surveys.

Advantage gained is based on a review of the documentation of the assessment performed, with the audit requirement determined to be fully satisfied and "signed-off" (full reciprocity) or that the assessment has partially satisfied requirements and a limited assessment will be performed (partial reciprocity). The customer always has the choice of accepting the valildity of a previously performed audit, or doing a complete or partial audit of the supplier's quality management system.


Quality System Survey (Reciprocity)
Customer A (or 2nd/3rd party) performs Quality System Survey of Supplier X.
Customer A Auditor leaves audit plan, results, and auditor qualification summary with Supplier X.
Customer B determines need for Quality System Survey of Supplier X.
Customer B notifies Supplier X of Survey need and requests Survey history and results.
Supplier X provides Customer A Survey data and Customer A status to Customer B.
Customer B approves Supplier X Quality System based on prior audit results and product quality history.
or
Customer B elects to perform Survey and then leaves results with Supplier X.

Baseline Quality System Maturity—Self Assessment

The maturity matrix on the following pages provides guidance for establishing criteria for evaluation of a supplier, and for implementing a mutually recognized evaluation process to validate quality management systems. The evaluation criteria summarized in the matrix are based on the appropriate elements of ISO 9001.

Baseline Quality System Maturity - Self Assessment

Management Responsibility	Quality System	Contract Review (Less 9003)	Design Control (Less 9002 and 9003)	Document and Data Control	Purchasing (Less 9003)	Control of Customer-Supplied Product (Less 9003)
• Executive management defines and documents Quality policy • Responsibility and authority of personnel who manage, perform, and verify quality operations defined and documented • Management reviews the Quality system at defined intervals to ensure its effectiveness • Associated documents and records are systematically maintained	• A quality system is established and documented to ensure product conforms to specified requirements • Quality Manual covers requirements of this International Standard • Quality system procedures effectively implement the quality system • Quality planning procedures define how the requirements for quality will be met • Associated documents and records are systematically maintained	• Procedures for review of contract or order to ensure that requirements are established and documented • Processes to resolve differences between contract requirements and company tender are in place • Capability to meet the contract requirements assessed • Amendments to a contract are similarly reviewed • Associated documents and records are systematically maintained	• Procedures to control and verify product design are established and documented to assure that specified requirements are met • Design and development planning is assigned to qualified personnel with adequate resources • Requirements of organizational interface, design input, design output, design review, design verification, design validation, and design changes are proceduralized • Associated documents and records are systematically maintained	• Procedures to control all documents and data related to the requirements of the ISO standard are established and documented • Procedures identify current revision status of documents and a method to preclude the use of invalid/obsolete documents • Changes to documents and data reviewed and approved by same function that performed original review and approval, unless designated otherwise • Nature of change identified in document or attachment • Associated documents and records are systematically maintained	• Procedures to ensure that purchased product conforms to requirements are established and documented • Evaluation, selection, and control of subcontractors based on their abilities and quality system, along with the impact on the quality of the final product • Quality records of acceptable subcontractors are maintained • Purchasing documents clearly describe documents/systems needed • Procedures for verifying product at the subcontractors premises are established and documented • Associated documents and records are systematically maintained	• Procedures for the control, verification, storage, and maintenance of customer-supplied product for the incorporation into the final product or for related activities are established and documented • Associated documents and records are systematically maintained
Fully robust management system in-place 5	Fully robust quality system in place 5	Fully robust contract review system in-place 5	Fully robust design control system in-place 5	Fully robust document & data control system in-place 5	Fully robust purchasing system in-place 5	Fully robust system for customer products in-place 5
Management systems documented and in place, with weaknesses in one or more elements 4	Quality systems documented and in place, with weaknesses in one or more elements 4	Contract review system documented and in place with weaknesses in one or more elements 4	Design control system documented and in place with weaknesses in one or more elements 4	Document & data control system documented and in place with weaknesses in one or more elements 4	Purchasing system documented and in place with weaknesses in one or more elements 4	Customer-supplied product system documented and in place with weaknesses in one or more elements 4
Management systems in place, yet with major weaknesses 3	Quality system in place, yet with major weaknesses 3	Contract review system in place, yet with major weaknesses 3	Design control system in place, yet with major weaknesses 3	Document & data control system in place, yet with major weaknesses 3	Purchasing system in place, yet with major weaknesses 3	Customer-supplied product system in place, yet with major weaknesses 3
Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2
Recognize the need for management systems, but no process initiated 1	Recognize the need for quality systems, but no process initiated 1	Recognize the need for contract review system, but no process initiated 1	Recognize the need for a design control system, but no process initiated 1	Recognize need for document & data control, but no process initiated 1	Recognize need for a purchasing system, but no process initiated 1	Recognize need for a system, but no process initiated 1

Baseline Quality System Maturity - Self Assessment

Product Identification and Traceability	Process Control (Less 9003)	Inspection and Testing	Control of Inspection, Measuring and Test Equipment	Inspection and Test Status	Control of Nonconforming Product	Corrective and Preventive Action (Less 9003)
• Procedures are established and documented to establish unique identification of individual product or batches for traceability required applications • Associated documents and records are systematically maintained	• Procedures are established and documented to identify processes that directly affect quality and ensure these processes are carried out under controlled conditions • Processes are carried out by qualified operators • Continuous monitoring and control of process parameters are in place • Requirements specify any qualification of process operations e.g., personnel/ associated equipment • Associated documents and records are systematically maintained	• Quality plan/procedures are established and documented for inspection and testing activities to verify specified requirements for product are met • Receiving Inspection verifies incoming product conforms to specified requirements prior to use/processing • In-process inspection verifies product conforms to specified requirements prior to inspection and test completion • Final inspection establishes the conformance of the finished product to specified requirements • Inspection and Test records show the product pass-fail results of inspection/ testing to acceptance criteria • Associated documents and records are systematically maintained	• Procedures established and documented to control, calibrate, and maintain inspection, measuring and test equipment used to demonstrate conformance of product to specified requirements • Measuring and test equipment identified that can affect product quality- calibrate at prescribed intervals • Process defined for calibra-tion of measuring and test equipment - certified equip-ment used is traceable to recognized national standards • Environment for measuring and test equipment is such that accuracy and fitness for use are maintained • Associated documents and records are systematically maintained	• A means to indicate conformance or nonconform-ance of product with regard to inspection and tests performed is established and documented • Status is maintained throughout production, installation, and servicing of product • Only product passing required inspections and tests can be used • Associated documents and records are systematically maintained	• Procedures to ensure that product which does not conform to specified require-ments is prevented from unintended use or installation • Controls provide for identification, documentation, evaluation, segregation, and disposition of nonconforming product • Responsibility is defined for review and authority for disposition of nonconforming product • Associated documents and records are systematically maintained	• Procedures for corrective/preventive action to eliminate the causes of nonconformities identified are established and documented • Process to effectively handle customer complaints, to ensure corrective action is taken and is effective • Preventive action includes use of appropriate sources of information to detect, analyze, and eliminate causes of nonconformities • Associated documents and records are systematically maintained
Fully robust ID & traceability system in-place 5	Fully robust process control system in-place 5	Fully robust inspection & test system in-place 5	Fully robust IM&TE system in-place 5	Fully robust inspection & test status system in-place 5	Fully robust nonconforming product system in-place 5	Fully robust corrective/ preventive system in-place 5
ID & traceability system is documented and in place, yet with weaknesses in one or more elements 4	Process control system is documented and in place with weaknesses in one or more elements 4	Inspection & test system is documented and in place with weaknesses in one or more elements 4	IM&TE system is documented and in place with weaknesses in one or more elements 4	Inspection & test status system is documented and in place with weaknesses in one or more elements 4	Nonconforming product system is documented and in place with weaknesses in one or more elements 4	Corrective/preventive system is documented and in place with weaknesses in one or more elements 4
ID & traceability system in place yet with major weaknesses 3	Process control system in place yet with major weaknesses 3	Inspection & test system in place yet with major weaknesses 3	IM&TE system in place yet with major weaknesses 3	Inspection & test status system in place yet with major weaknesses 3	Nonconforming product system in place yet with major weaknesses 3	Corrective/preventive system in place yet with major weaknesses 3
Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2
Recognize the need for an ID & traceability system, but no process initiated 1	Recognize the need for a process control system, but no process initiated 1	Recognize the need for an inspection & test system, but no process initiated 1	Recognize the need for an IM&TE system, but no process initiated 1	Recognize the need for a system, but no process initiated 1	Recognize the need for a nonconformance system, but no process initiated 1	Recognize the need for a corrective/preventive system, but no process initiated 1

Baseline Quality System Maturity - Self Assessment

Handling, Storage, Packaging, Preservation and Delivery	Control of Quality Records	Internal Quality Audits (Less 9003)	Training	Servicing (Less 9003)	Statistical Techniques
• Procedures are established and documented for handling, storage, packaging, preservation, and delivery of product • Handling methods prevent damage/deterioration • Designated storage areas or stock rooms controls prevent damage or deterioration of product pending delivery • Packing, packaging and marking processes ensure conformance to specified requirements • Appropriate methods of preservation and segregation of product being used • Product after final inspection and test awaiting delivery is protected • Associated documents and records are systematically maintained	• Procedures for the identification, collection, indexing, access, filing, safe storage, maintenance, and disposition of quality records are established and documented • Records conform to specified requirements • Associated documents and records are systematically maintained	• Procedures to implement a program of planned/ scheduled audits that determine the effectiveness of the quality system are established and documented • Audits are performed by personnel independent of activity audited • Audit results are recorded and responsible area managers take timely corrective action on deficiencies • Closed loop follow-up verifies implementation and effectiveness of corrective actions • Associated documents and records are systematically maintained	• Procedures for identifying training needs and the means to provide the training to all personnel performing tasks that affect quality are established and documented • Associated documents and records are systematically maintained	• Procedures are established and documented for performing, verifying, and reporting that servicing meets the specified requirements • Associated documents and records are systematically maintained	• Procedures are established and documented for the statistical techniques required for establishing, controlling, and verifying process capability and product characteristics • Associated documents and records are systematically maintained
Fully robust HSPP&D system in-place 5	Fully robust quality record system in-place 5	Fully robust audit system in-place 5	Fully robust training system in-place 5	Fully robust servicing system in-place 5	Fully robust statistical system in-place 5
HSPP&D system is documented and in place with weaknesses in one or more elements 4	Quality record system is documented and in place with weaknesses in one or more elements 4	Audit system is documented and in place with weaknesses in one or more elements 4	Training system is documented and in place with weaknesses in one or more elements 4	Servicing system is documented and in place with weaknesses in one or more elements 4	Statistical system is documented and in place with weaknesses in one or more elements 4
HSPP&D system in place yet with major weaknesses 3	Quality record system in place yet with major weaknesses 3	Audit system in place yet with major weaknesses 3	Training system in place yet with major weaknesses 3	Servicing system in place yet with major weaknesses 3	Statistical system in place yet with major weaknesses 3
Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2	Fully recognize requirements, on track towards planned implementation 2
Recognize the need for an HSPP&D system, but no process initiated 1	Recognize the need for a quality record system, but no process initiated 1	Recognize the need for an audit system, but no process initiated 1	Recognize the need for a training system, but no process initiated 1	Recognize the need for a servicing system, but no process initiated 1	Recognize the need for a statistical system, but no process initiated 1

Section VI

Training Guidance

Introduction

The Government and Industry Quality Liaison Panel has identified the essential need for training both Government and industry personnel involved directly or indirectly with product development/production and procurement. Training is imperative for effective implementation of the principles covered in this document. Training should provide a common understanding and interpretation of the requirements of a BQMS as well as information on how the use of APs can be effectively incorporated into a supplier's approach to quality and into the procurement process itself. Training should also enable participants to better understand the quality aspects and responsibilities of their jobs within their organizations.

Most people need a better understanding of their roles and responsibilities in the quality system because too often quality is perceived as being a responsibility only of the quality assurance/control organizations. There is an ongoing fundamental change in the business/Government environment which necessitates the transition of quality responsibilities from the quality assurance/control organization to other organizations, such as engineering, manufacturing, procurement, etc.

Effective Deployment

Because quality is the responsibility of the entire organization, top industry and Government agency management must be involved and committed to effectively deploy that responsibility to all organizational units. Effective deployment will also require Government and industry personnel at all levels to develop a better understanding of their roles and responsibilities for quality. With such an understanding, supplier and Government personnel can work together more effectively and more accurately assess the

value of their activities on the quality of the products being produced and purchased.

In addition, both Government and industry personnel must continue to work on changing their perspective from an emphasis only on products to an emphasis on systems and processes. Processes can and should be analyzed to identify and eliminate non-value added practices. A process orientation will also facilitate a more effective corrective action system.

Levels of Training

The Panel recognized that different levels of training will be required for different groups of people. All personnel will require a generic understanding of the concepts, while smaller groups of people (e.g., subject matter experts) will require more detailed information. In addition, those who assess quality system implementation will require training specifically targeted to auditing and audit administration techniques.

Because of the diverse needs of the individuals and organizations involved, detailed information on training is not provided in this section. It is recommended that the reader refer to the guidance being prepared by the Panel specifically on the issues associated with training.

Section VII

Glossary

Advanced Practices (APs):

Advanced practices (APs) for product quality are those engineering, manufacturing and management practices, tools and processes used during requirements definition, design, manufacturing, and acceptance of products to enhance product quality and reduce risk.

Other terms used synonymously within the industry and Government agencies include but are not limited to the following:

- Advanced Quality Practices/Systems
- Defect Prevention
- Total Quality Management
- Engineering, Manufacturing, and Management Best Practices
- Best Practices for Quality
- Advanced Process Management

Basic Quality Management System (BQMS):

A quality management system based on the appropriate elements of ISO 9001.

Key Process:

A key process is one that if out of control would cause an appreciable adverse affect on the performance of the product or service being procured. The identification of key processes and performance attributes should represent a common agreement between the customer and the contractor.

Insight:

A customer's (or agent thereof) risk-based understanding, validation, and surveillance of a supplier's management systems and process performance metrics to assure product quality and contract compliance.

Mutual Recognition:

An agreement between two or more customers to honor one another's assessment performed on a supplier's quality management system.

Oversight:

In-process and end item inspections and document reviews aimed at detecting problems, performed on-site in a supplier's facility by a customer (or agent thereof).

Product Specific Elements:

Design features or special processes implemented to assure that unique customer requirements are achieved.

Quality Management System (QMS):

Integration of the BQMS, APs, and unique processes as may be necessary to accommodate customer requirements.

Reciprocity:

The act of one customer being able to take advantage of an assessment performed previously by another customer, consciously enabled by preestablished conditions arranged with the affected supplier.

Single Quality Management System (SQMS):

One defined by the supplier for a specific facility. It contains a basic quality management system (BQMS) and is augmented by facility-wide advanced practices, as appropriate.

Section VIII

G&IQLP Membership

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G&IQLP Web Site:

This Guide and other G&IQLP information is available on the Internet at:

www.giqlp.org

G&IQLP Supporting Material:

Supporting Material that has been or will be developed by G&IQLP members and approved for release by the G&IQLP Leadership Team is also available on the G&IQLP Web Site.

This material explains G&IQLP concepts in greater detail and provides examples, training material, and lessons learned.

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